## Claims

- [c1] A scatterometry target, comprising:
  a plurality of parallel elongated features, each having a
  length in a lengthwise direction; and
  a plurality of stress-relief features disposed at a plurality
  of positions along said length of each said elongated
  feature.
- [c2] The scatterometry target of claim 1 wherein said elongated features include linearly extending features, wherein said stress-relief features include connecting features which connect pairs of said elongated linearly extending features in a direction transverse to said lengthwise direction.
- [c3] The scatterometry target of claim 1 wherein said stress-relief features include gaps, said gaps interrupting said elongated features.
- [c4] The scatterometry target of claim 2 wherein said stressrelief features further include gaps, said gaps interrupting said elongated features, wherein said scatterometry target including said connecting features and said gaps is adapted to produce a return signal mimicking a return

signal from a scatterometry target not having said stress-relief features.

- [c5] The scatterometry target of claim 4 wherein said elongated linearly extending features are provided in a layer of photoresist.
- [c6] The scatterometry target of claim 5 wherein said elongated linearly extending features mimic patterned photoresist layer features at critical dimension.
- [c7] The scatterometry target of claim 1 wherein said stressrelief features include jogs in said parallel elongated features.
- The scatterometry target of claim 2 wherein said connecting features include bridges, said bridges satisfying the relation  $2\% > (N_B L_B)/NL$ , where  $N_B$  is the number of bridges of the grating,  $L_B$  the length of each bridge, N the number of lines of the grating, and L the length of the grating.
- [c9] The scatterometry target of claim 3 wherein said gaps satisfy the relation 2 % >  $(N_G L_G)/NL$ , where  $N_G$  is the number of gaps of the grating,  $L_G$  the length of each gap, N the number of lines of the grating, and L the length of the grating.

- [c10] The scatterometry target of claim 7 wherein said jogs satisfy the relation  $f_J(N_J/N)(W/L) < 2\%$ , where  $N_J$  is the number of jogs of the grating, N the number of lines of the grating, L the length of the grating, W the width of the grating, and  $f_J$  a process factor.
- [c11] A scatterometry target, comprising:
  a plurality of parallel elongated features each having
  length in a lengthwise direction, each said elongated
  feature having jogs disposed at a plurality of locations
  along said length, said jogs causing said scatterometry
  target to produce a return signal which is sensitive to
  photolithographic defocus.
- [c12] The scatterometry target of claim 11 wherein said jogs satisfy the relation  $f_j(N_j/N)(W/L) > 1$ , where  $N_j$  is the number of jogs of the grating, N the number of lines of the grating, L the length of the grating, W the width of the grating, and  $f_j$  a process factor.
- [c13] A method of monitoring photolithographic process, comprising:
  providing a first scatterometry target having a plurality of parallel elongated features, each having a length in a lengthwise direction and a plurality of stress-relief features disposed at a plurality of positions along said length of each said elongated feature;

illuminating said first scatterometry target; detecting a return signal from said first scatterometry target;

comparing said return signal to signals of a library of stored signals to determine a match; and monitoring photolithographic process based on said determined match.

- [c14] The method of claim 13 further comprising:

  providing a second scatterometry target having a plurality of parallel elongated features each having length in a
  lengthwise direction, each said elongated feature having
  jogs disposed at a plurality of locations along said
  length, said jogs causing said scatterometry target to
  produce a return signal which is sensitive to photolithographic defocus.
- The method of claim 14 wherein said stress-relief features include connecting features which connect pairs of said parallel elongated features in a direction transverse to said lengthwise direction, and said stress-relief features further include gaps, said gaps interrupting said elongated features, wherein said first scatterometry target including said connecting features and said gaps is adapted to produce a return signal mimicking a return signal from a scatterometry target not having said stress-relief features.

- [c16] The method of claim 15 wherein said parallel elongated features are provided in a layer of photoresist.
- [c17] The method of claim 16 wherein said parallel elongated features mimic patterned photoresist layer features at critical dimension.
- [c18] The method of claim 18 wherein said first scatterometry target overlies a structure layer, and said stored signals of said library represent an effect of said structure layer on said return signal.